Exhibit 10

1: Transgenic Res. 1995 Mar;4(2):87-104.

Expression of bacterial cysteine biosynthesis genes in transge mice and sheep: toward a new in vivo amino acid biosynthesi pathway and improved wool growth.

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It is possible to improve wool growth through increasing the supply of cy available for protein synthesis and cell division in the wool follicle. As m can only synthesise cysteine indirectly from methionine via trans-sulphur expression of transgenes encoding microbial cysteine biosynthesis enzym provide a more efficient pathway to cysteine synthesis in the sheep. If ex the rumen epithelium, the abundant sulphide, produced by ruminal microorganisms and normally excreted, could be captured for conversion cysteine. This paper describes the characterisation of expression of the cy biosynthesis genes of Salmonella typhimurium, cysE, cysM and cysK, an cysEM, cysME and cysKE genes as transgenes in mice and sheep. The li transgenes were constructed with each gene driven by a separate promote with the Rous sarcoma virus long terminal repeat (RSVLTR) promoter o mouse phosphoglycerate kinase-1 (mPgk-1) promoter, and with human g hormone (hGH) polyadenylation sequences. Transgenesis of mice with th RSVLTR-cysE gene afforded tissue-specific, heritable expression of the Despite high levels of expression in a number of tissues, extremely low le expression occurred in the stomach and small intestine. Results of a conc sheep transgenesis experiment using the RSVLTR-cysEM and -cysME li transgenes revealed that the RSVLTR promoter was inadequate for expre the rumen. Moreover, instability of transgenes containing the RSVLTR s was observed. Expression of mPgk-cysME and -cysKE linked transgenes tissues of the mice examined, including the stomach and small intestine, this promoter to be a better candidate for expression of these transgenes i analogous tissues of sheep. However, a subsequent sheep transgenesis ex indicated that use of the mPgk-1 promoter, active ubiquitously and early development, may be inappropriate for expression of the cysteine biosynt transgenes. In summary, these results indicate that enzymically active ba cysteine biosynthesis gene products can be coexpressed in mammalian ce vivo but that expression of the genes should be spatio-temporally restrict adult sheep rumen epithelium.

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